



US007285122B2

(12) **United States Patent**
Sanford et al.

(10) **Patent No.:** **US 7,285,122 B2**
(45) **Date of Patent:** **Oct. 23, 2007**

(54) **METHOD AND APPARATUS FOR RESECTING A DISTAL FEMUR AND A PROXIMAL TIBIA IN PREPARATION FOR IMPLEMENTING A PARTIAL KNEE PROSTHESIS**

5,649,929	A *	7/1997	Callaway	.....	606/88
5,911,723	A *	6/1999	Ashby et al.	.....	606/88
5,935,128	A *	8/1999	Carter et al.	.....	606/69
5,968,050	A *	10/1999	Torrie	.....	606/87
6,174,314	B1 *	1/2001	Waddell	.....	606/88
6,478,799	B1 *	11/2002	Williamson	.....	606/90
6,969,393	B2 *	11/2005	Pinczewski et al.	.....	606/88

(75) Inventors: **Adam H. Sanford**, Warsaw, IN (US);
Toby N. Farling, Warsaw, IN (US);
Robert A. Hodorek, Warsaw, IN (US);
Mark A. Price, Warsaw, IN (US); **Paul L. Saenger**, Asheville, NC (US);
Richard V. Williamson, Ana Cortes, WA (US)

FOREIGN PATENT DOCUMENTS

WO	WO 01/66022	*	3/2001	.....	606/87
WO	WO0166022	*	3/2001	.....	606/87

(73) Assignee: **Zimmer, Inc.**, Warsaw, IN (US)

* cited by examiner

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 388 days.

Primary Examiner—Pedro Philogene
(74) *Attorney, Agent, or Firm*—Botkin & Hall, LLP

(21) Appl. No.: **10/462,174**

(57) **ABSTRACT**

(22) Filed: **Jun. 16, 2003**

A method of resecting a proximal tibia and distal femur for implanting a partial knee prosthesis uses a resecting kit which includes multiple spacers, each of which has a different spacing dimension. A surgeon selects the appropriate spacer with the amount of correction desired to align the patient's leg and installs the spacer with the spacing dimension between the distal femur and proximal tibia which is to receive the partial knee prosthesis. The spacers have projecting stems, upon which a resector is installed. The resector is then aligned with the axis selected by the surgeon according to known methods, and is pinned to the femur and proximal tibia. A distal femoral cut is then made in the femur after which the resector is removed while leaving at least two of the pins in place, the pins being headless pins. A second resector is then installed on the pins to effect the required cut of the tibia. Additional cuts are made in the femur according to known procedures, and the femoral and tibial prostheses are then installed, according to known procedures.

(65) **Prior Publication Data**

US 2003/0216741 A1 Nov. 20, 2003

Related U.S. Application Data

(62) Division of application No. 09/885,864, filed on Jun. 20, 2001, now Pat. No. 6,632,225.

(51) **Int. Cl.**

A61F 5/00 (2006.01)

A61B 17/58 (2006.01)

(52) **U.S. Cl.** **606/87**; 606/88; 606/90

(58) **Field of Classification Search** 606/87, 606/88, 90, 80, 86, 89, 102, 104

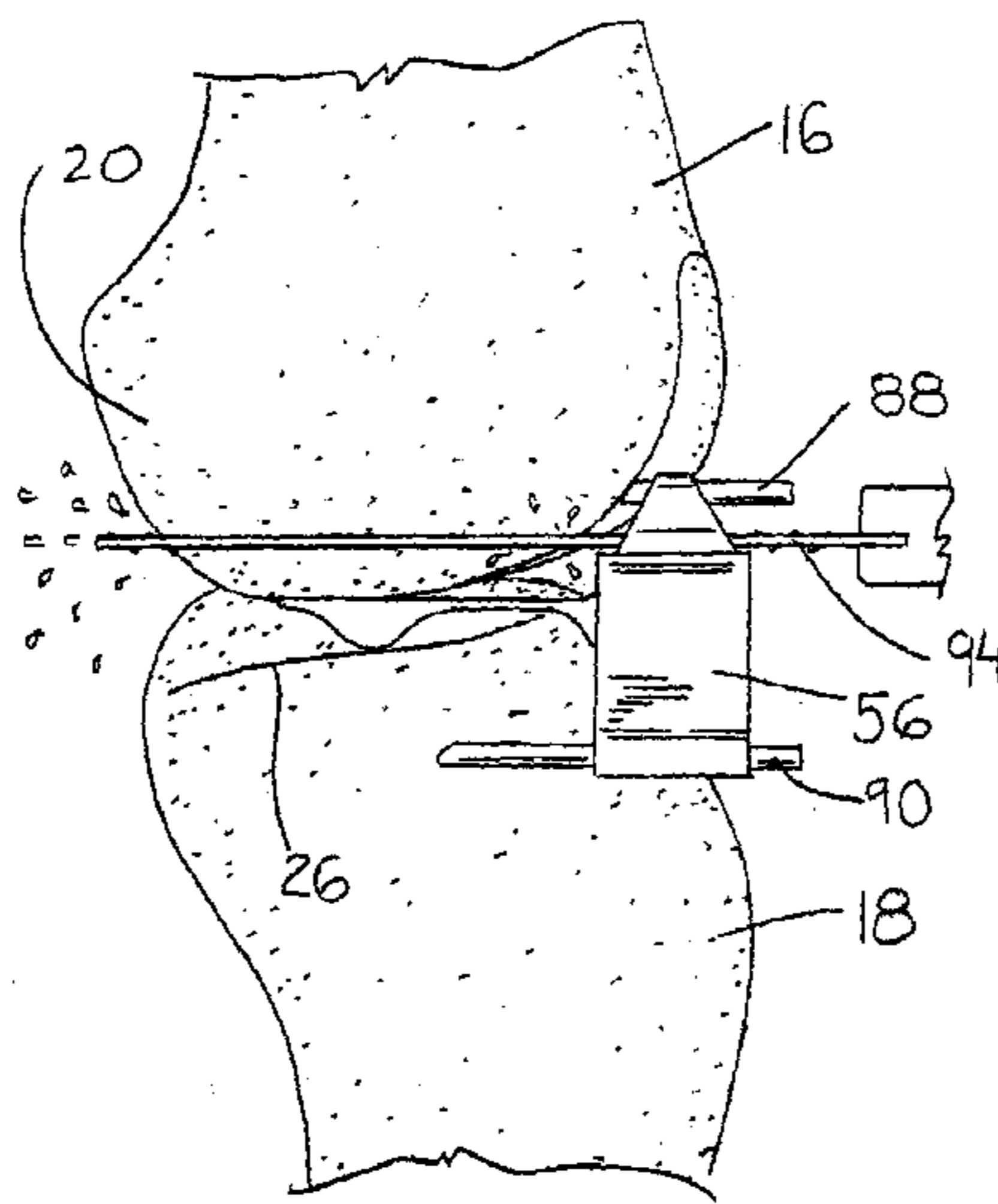
See application file for complete search history.

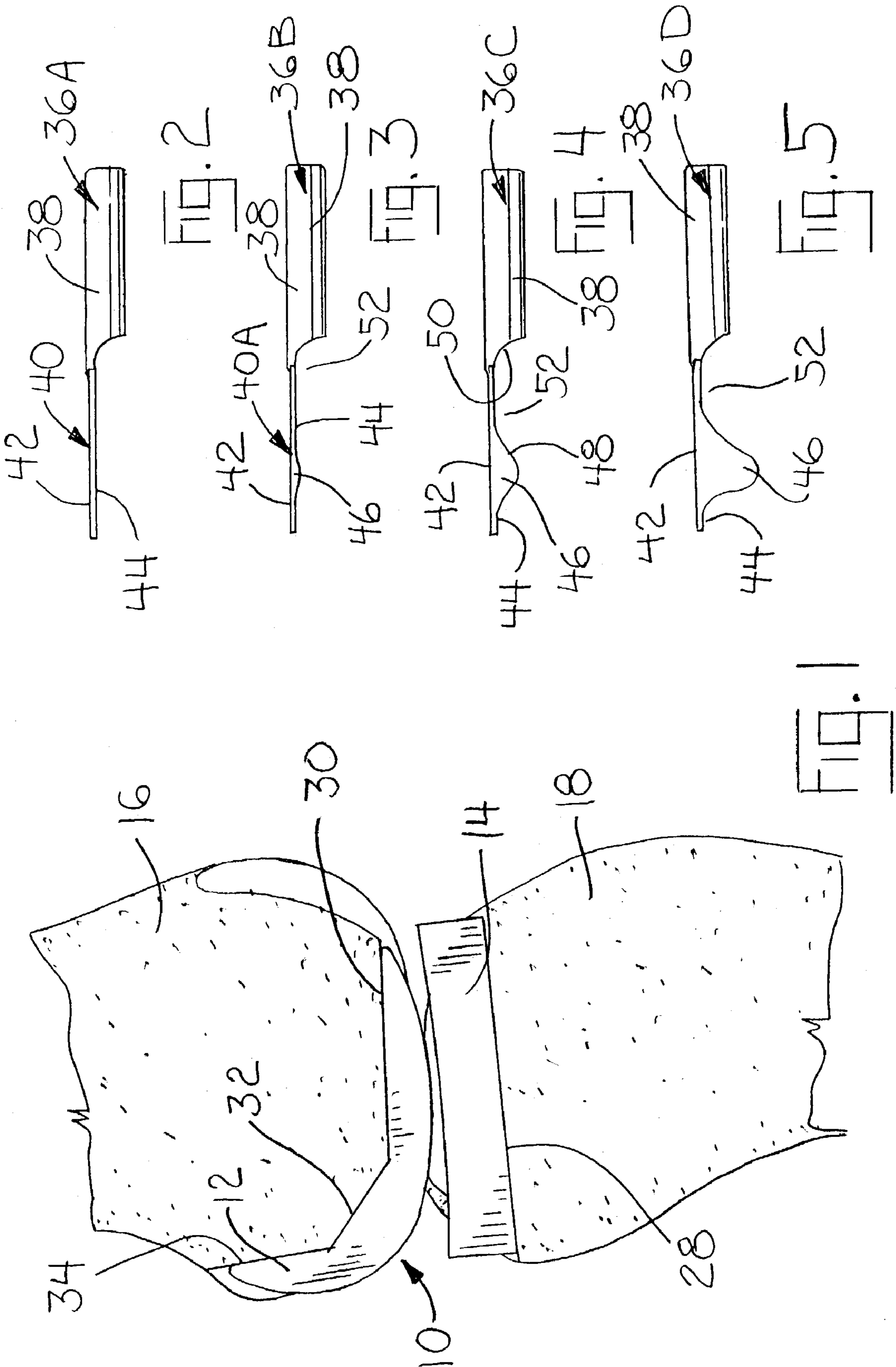
(56) **References Cited**

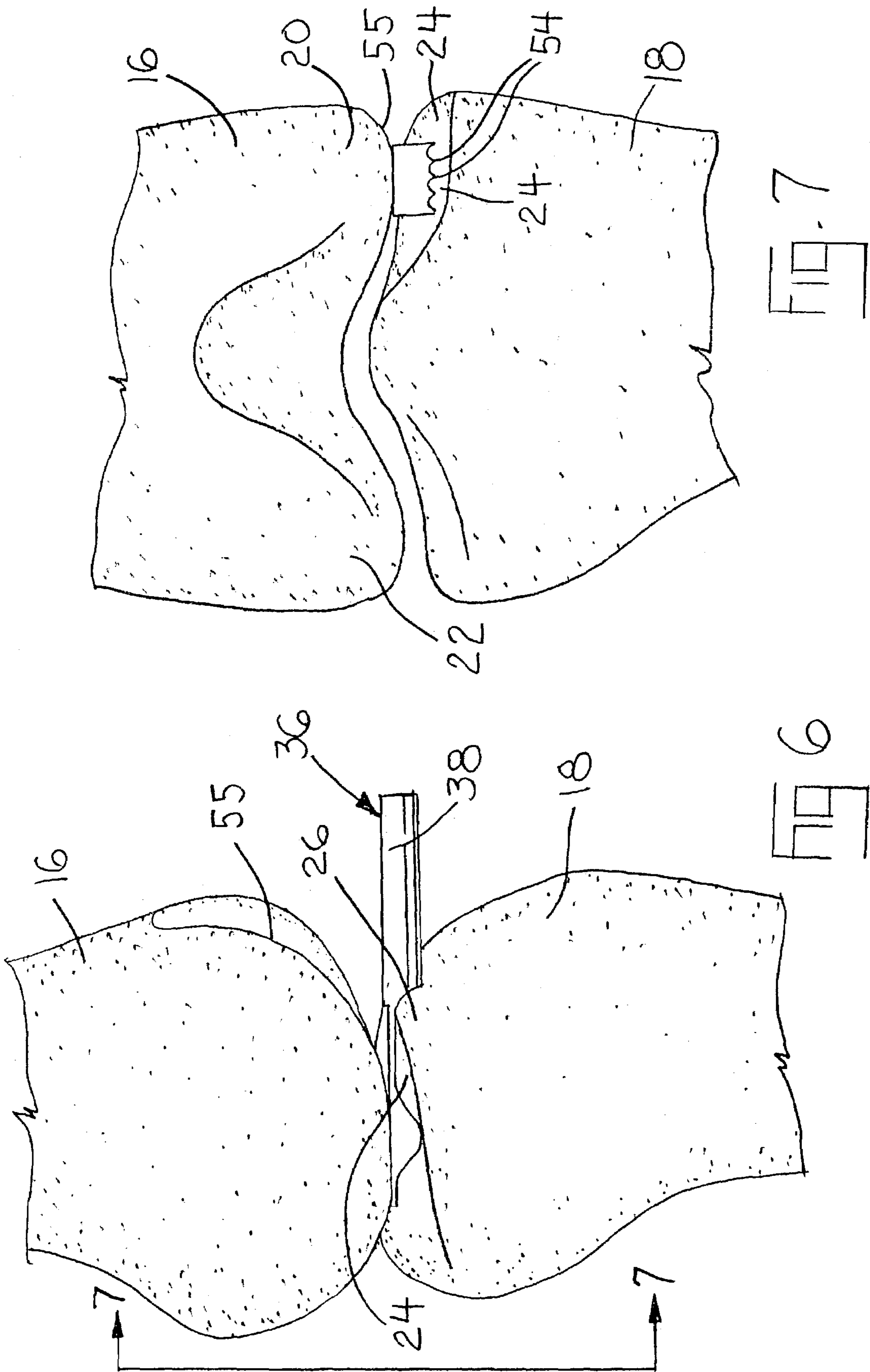
U.S. PATENT DOCUMENTS

4,567,885 A * 2/1986 Androphy 606/88

21 Claims, 9 Drawing Sheets







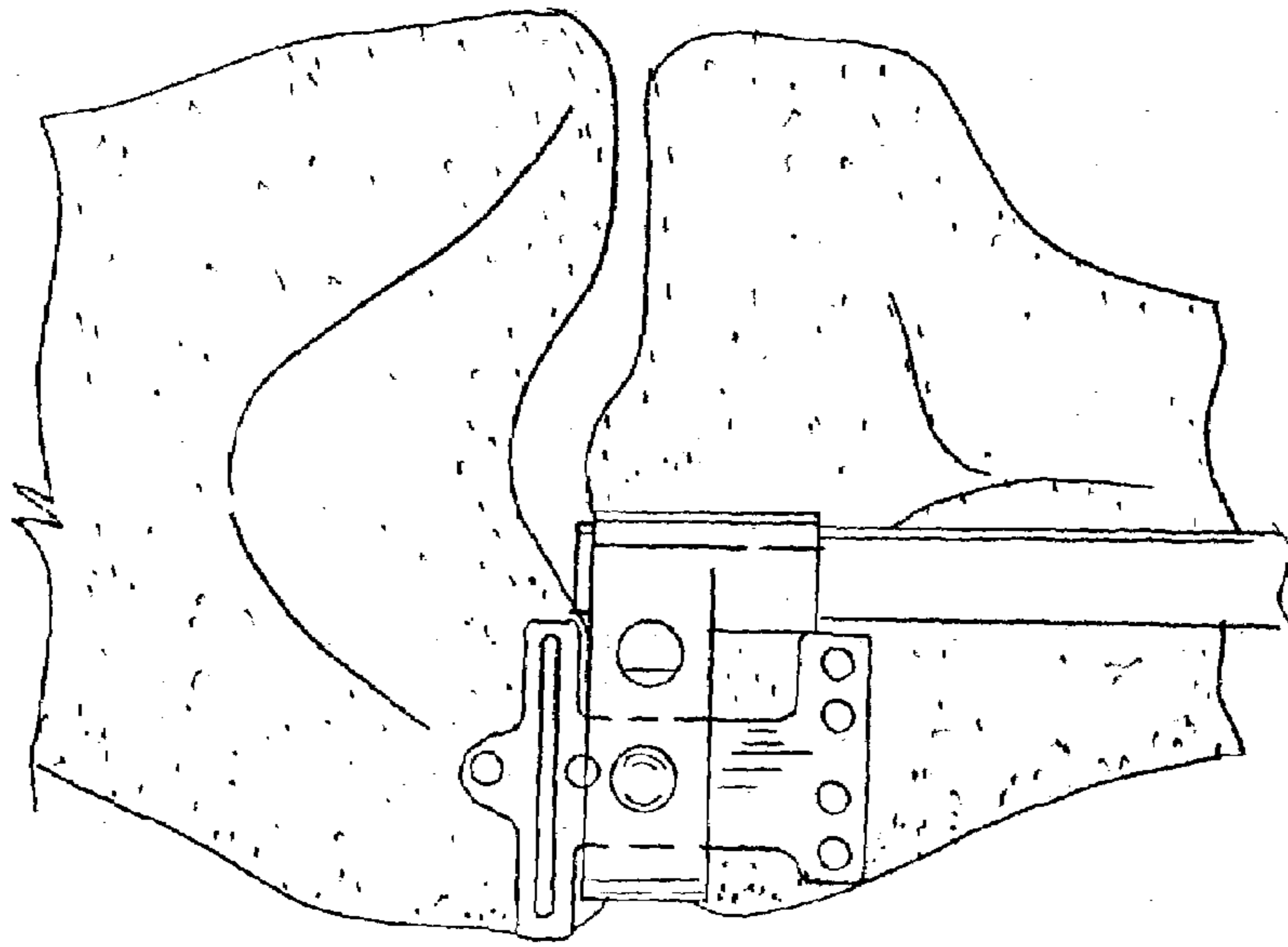


FIG. 13

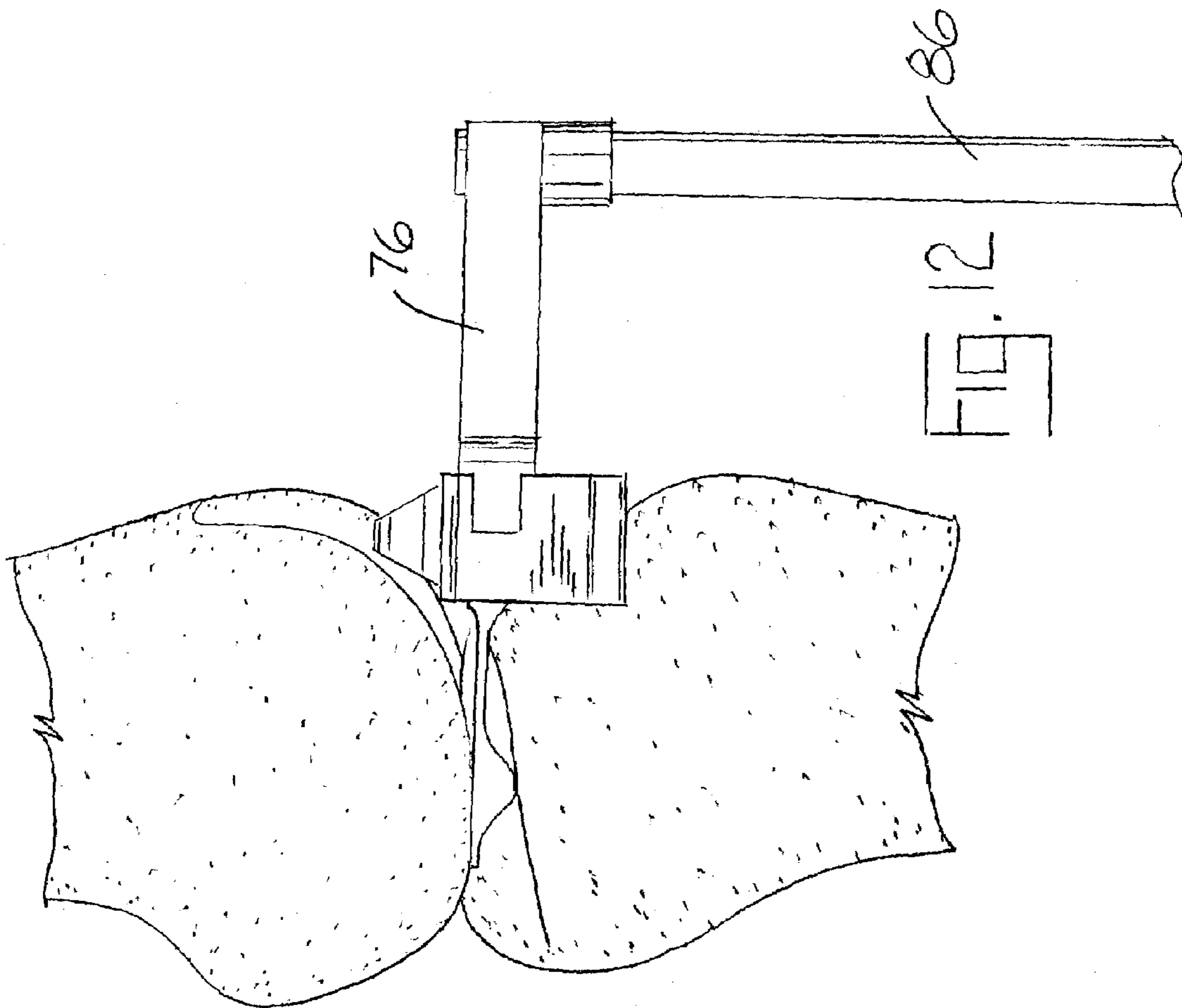


FIG. 12

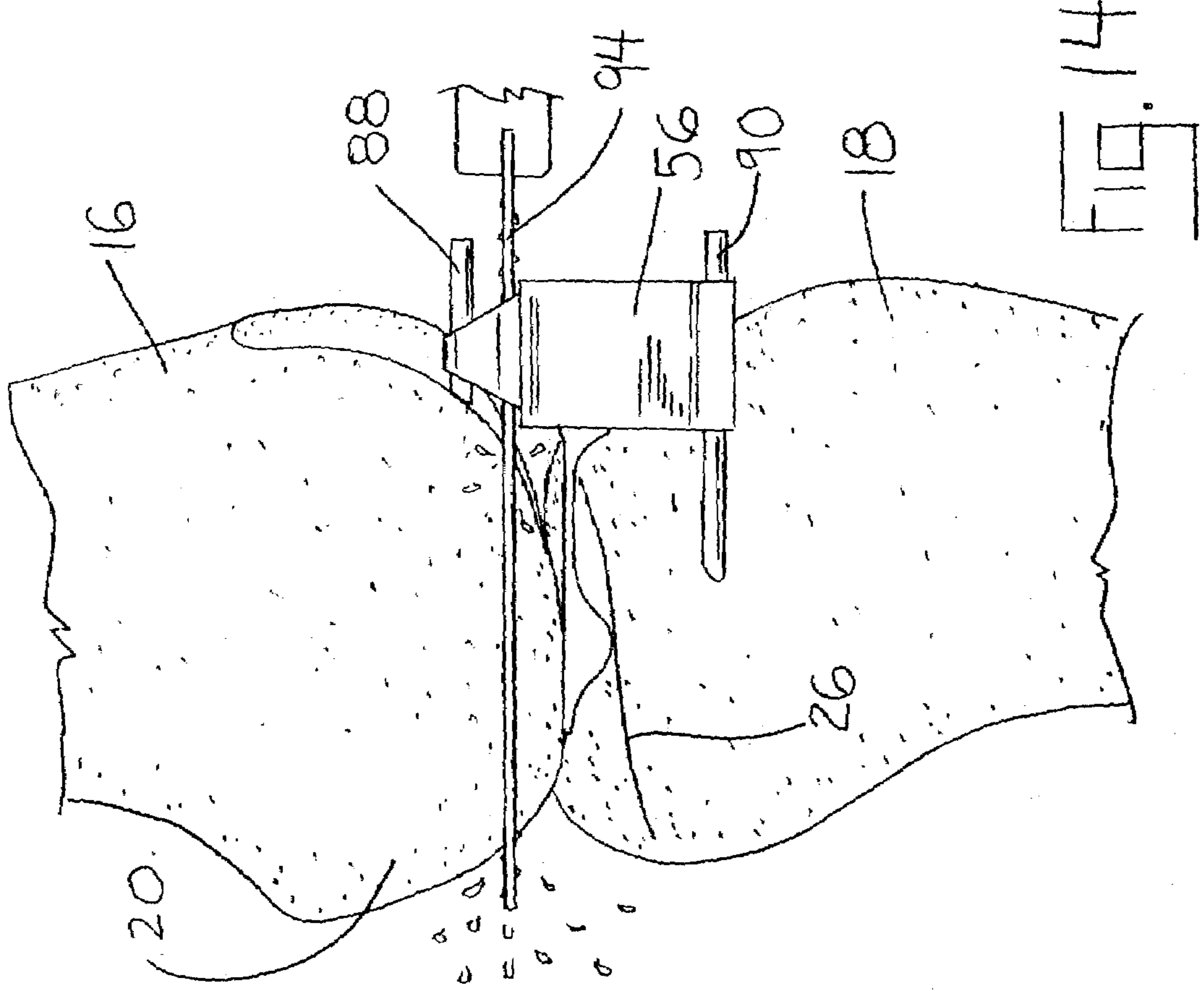


FIG. 14

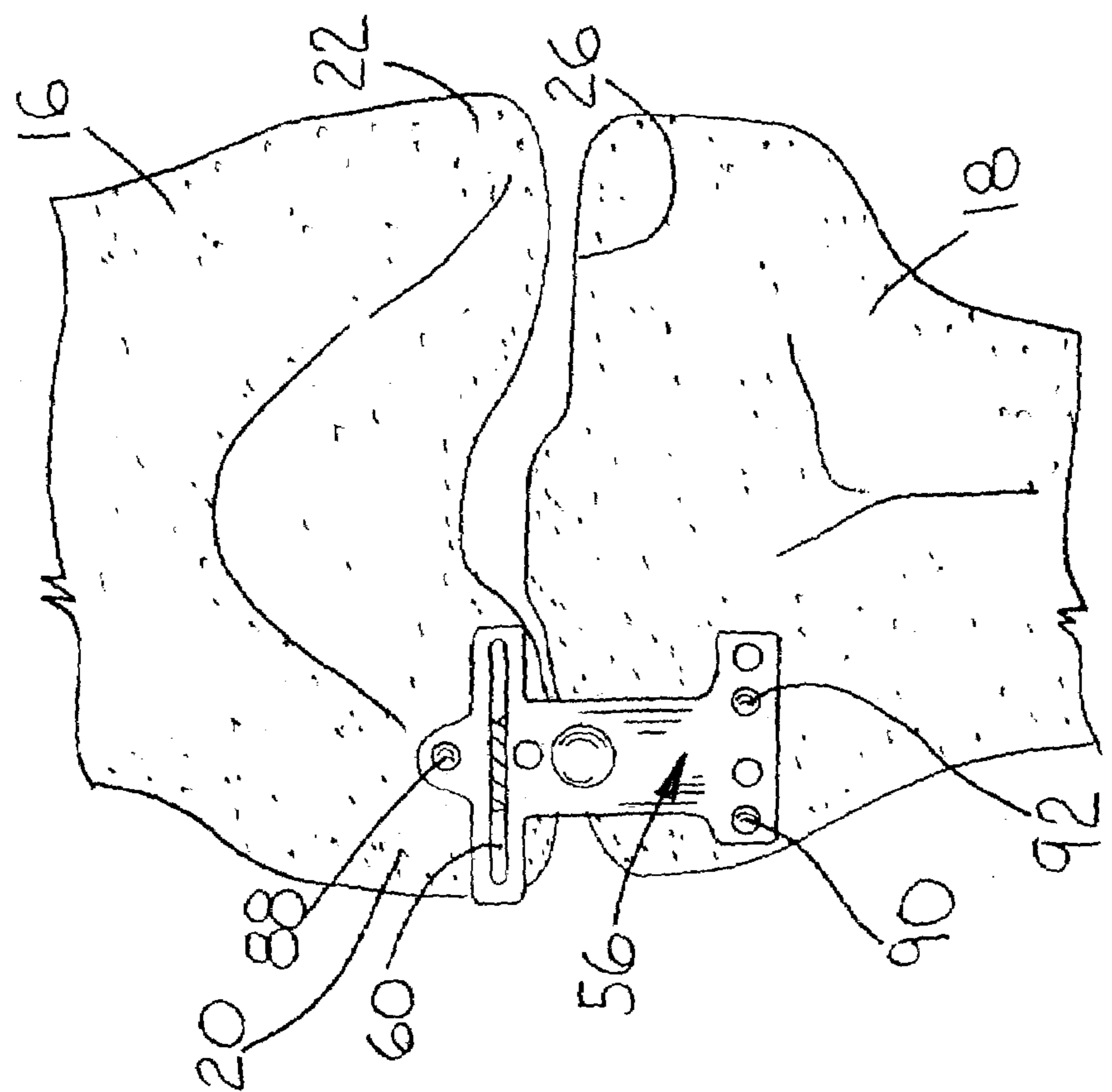


FIG. 15

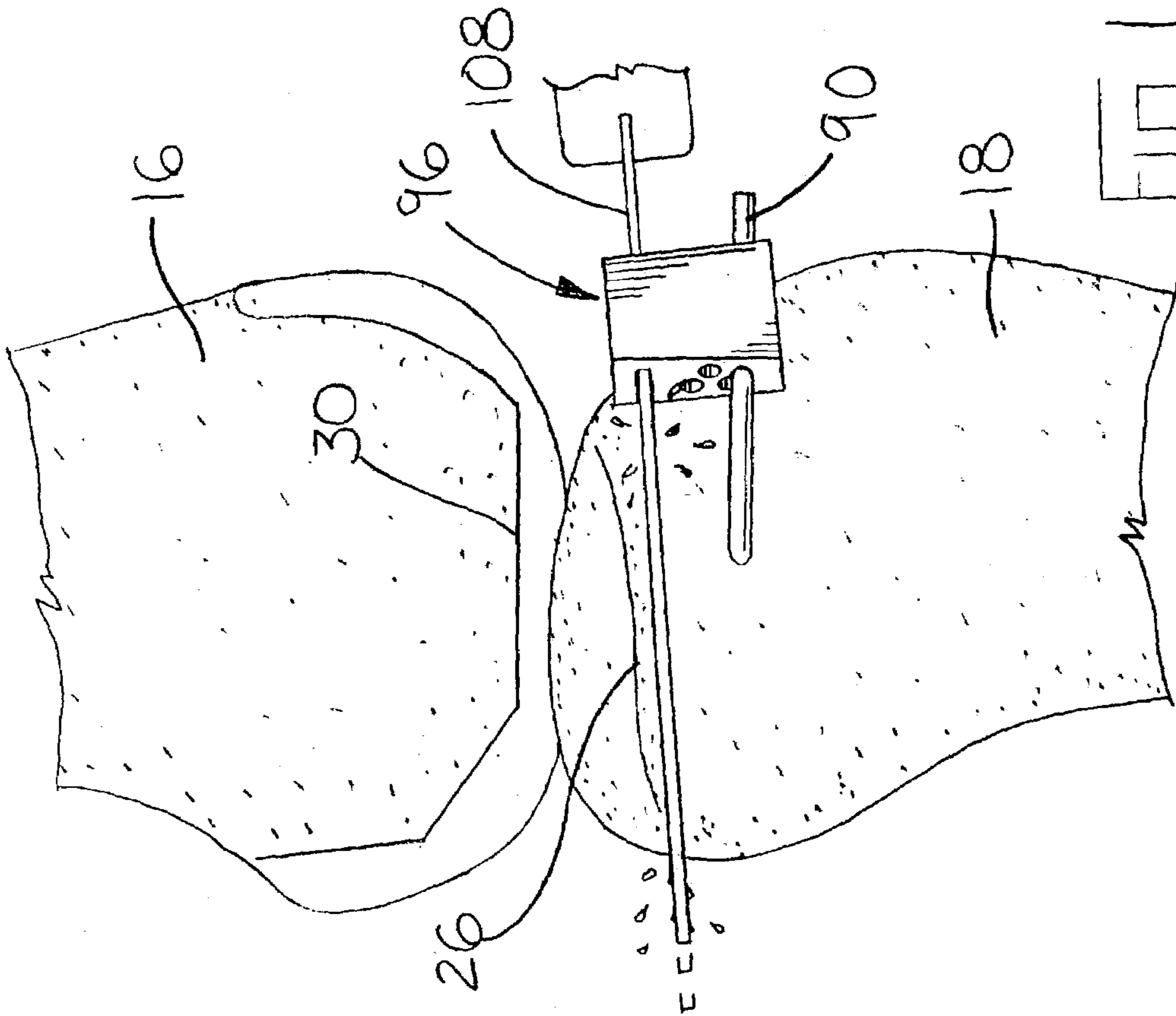


FIG. 16

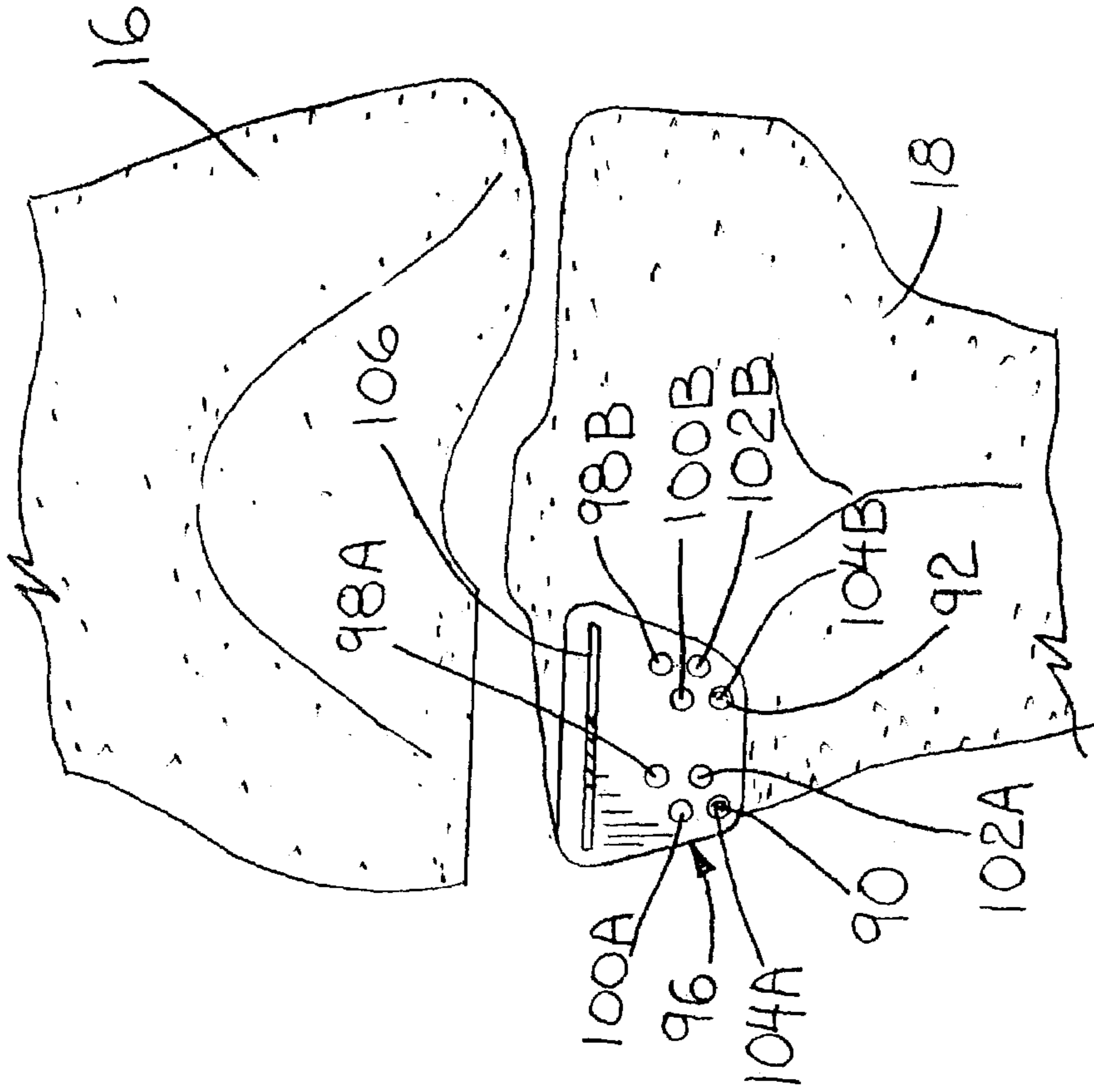
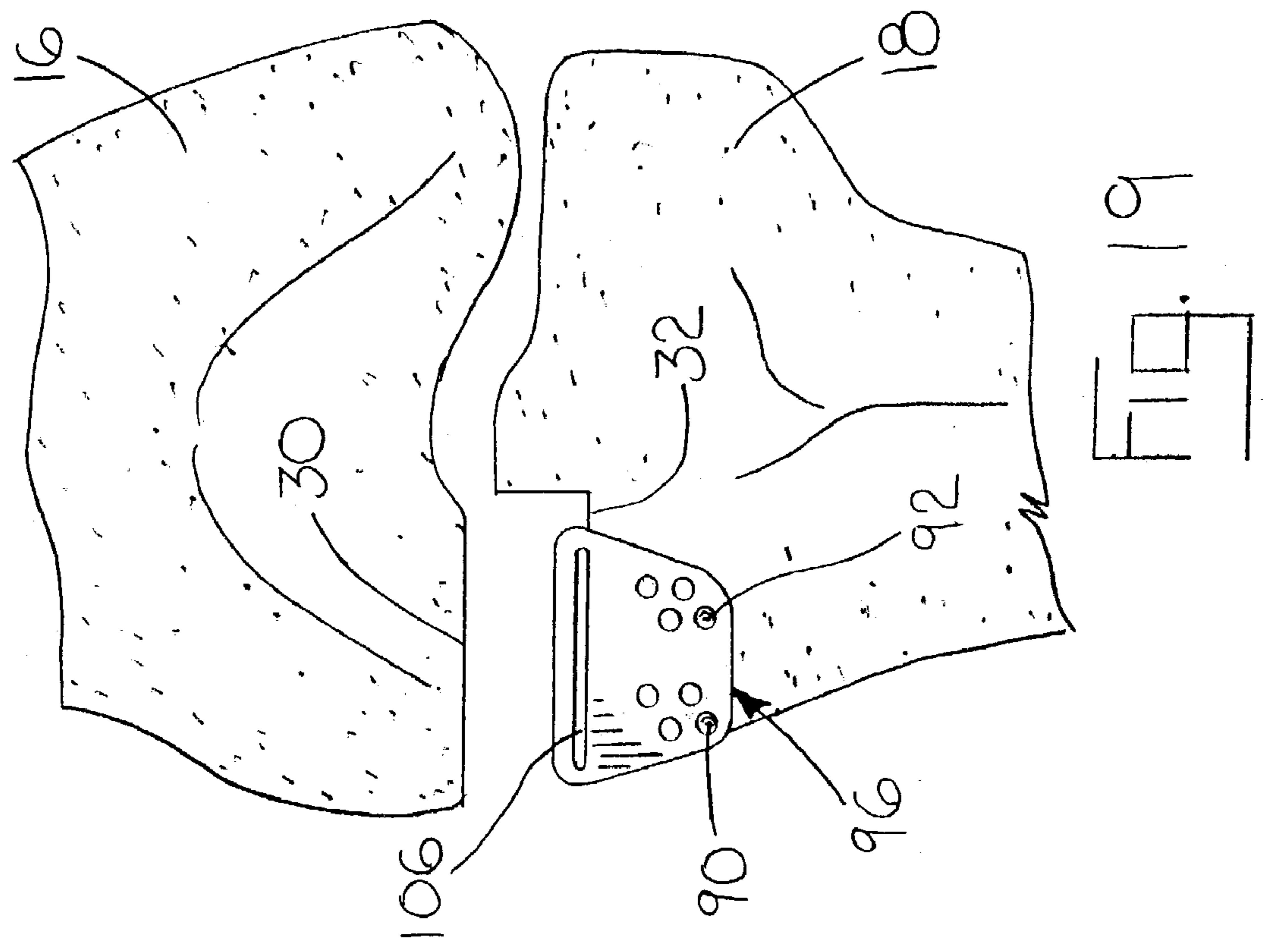
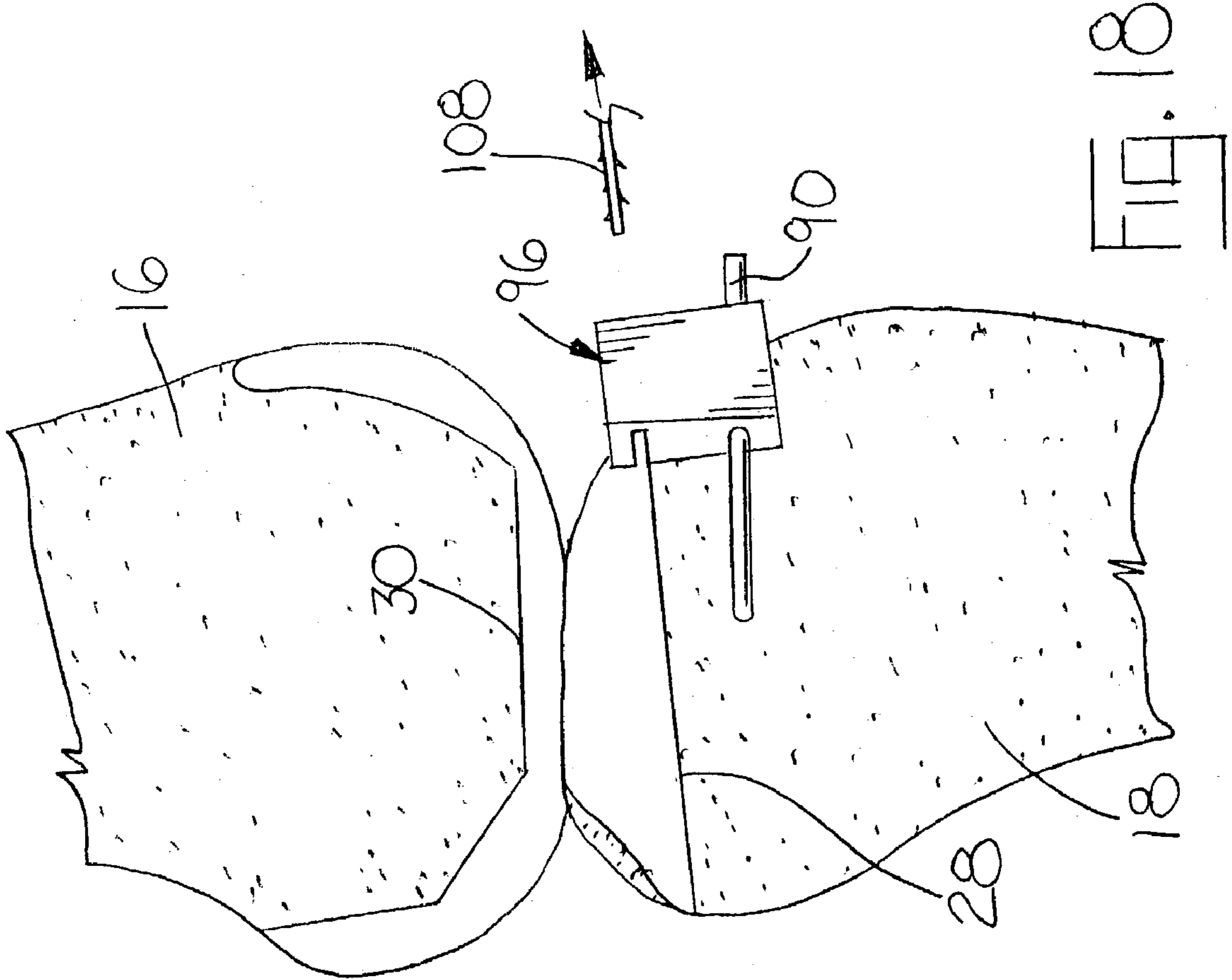


FIG. 17



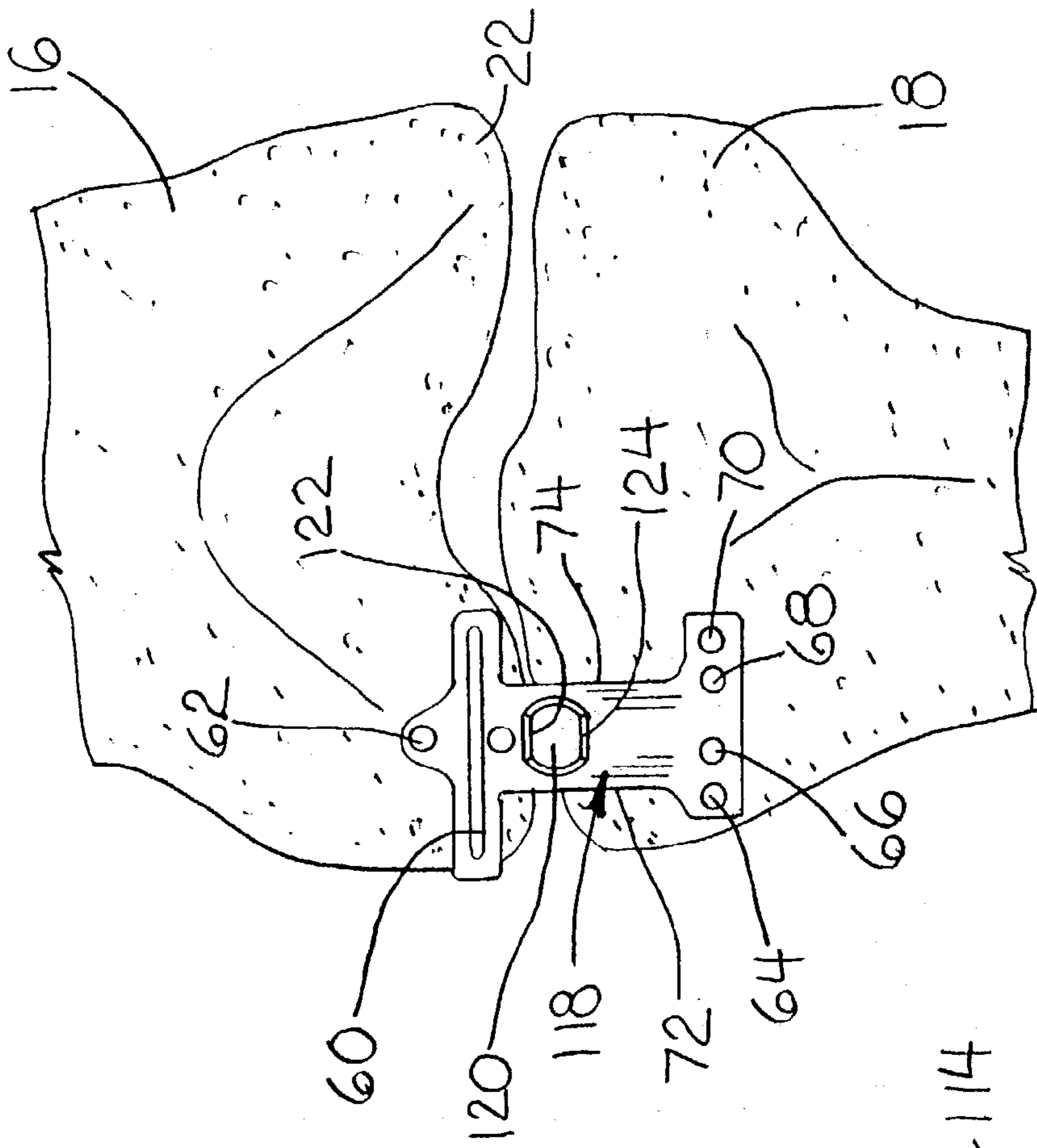


FIG. 21

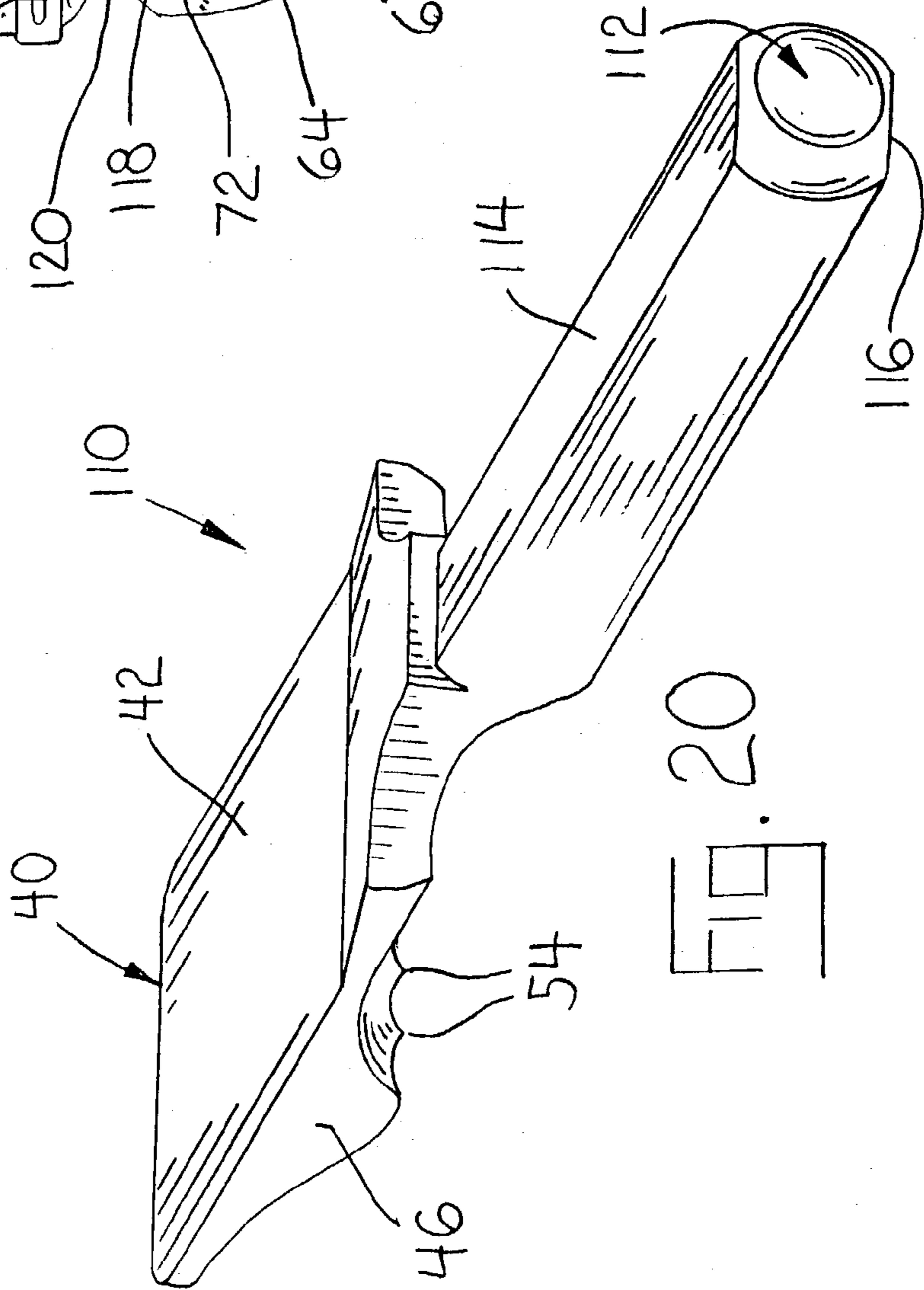


FIG. 20

1

**METHOD AND APPARATUS FOR
RESECTING A DISTAL FEMUR AND A
PROXIMAL TIBIA IN PREPARATION FOR
IMPLEMENTING A PARTIAL KNEE
PROSTHESIS**

CROSS REFERENCE TO RELATED
APPLICATION

This is a division of application Ser. No. 09/885,864, filed 10
Jun. 20, 2001 now U.S. Pat. No. 6,632,225.

TECHNICAL FIELD

This invention relates to a method and apparatus for 15
resecting a distal femur and a proximal tibia in preparation
for implanting a partial knee prosthesis.

BACKGROUND OF THE INVENTION

Partial knee replacement surgery has become relatively 20
common, and according to traditional practice, requires a
relatively large incision in the patient in order to realign the
patient's leg, remove any diseased bone and cartilage, and
provide a proper surface for engagement with the tibial and
femoral prostheses which must mate to form the partial knee
replacement. Such large and complicated incisions increase
surgical time and risk and also lengthen patient recovery.
Accordingly, more recently minimally invasive techniques
have become available, which greatly reduce the size of the
required incision, thus providing more rapid healing and
recovery for the patient. The instruments used in minimally
invasive surgery clearly must be relatively small and are
preferably uncomplicated, due to the space constraints
within the knee. Further, these instruments must permit
alignment of the knee and the proper preparation of the
implant surfaces in order to receive and retain the prosthe-
ses.

When a patient's knee deteriorates, cartilage wears away,
and the patient becomes bow-legged (or knock-kneed),
depending upon which side of the knee is diseased. Accord-
ingly, instruments must be used to reset the spacing between
the distal femur and proximal tibia receiving the partial knee
implant, to correct bow-leggedness and the patient's knock-
knees. Overcorrection must be avoided, in order to avoid
wear (and eventual deterioration) of the side of the knee not
receiving the partial knee prosthesis.

SUMMARY OF THE INVENTION

The present invention provides a resecting kit which 50
includes multiple spacers, each of which has a different
spacing dimension. A surgeon selects the appropriate spacer
with the amount of correction desired to align the patient's
leg and installs the spacer with the spacing dimension
between the distal femur and proximal tibia on the side of 55
the knee which is to receive the partial knee prosthesis. The
spacers have projecting stems, upon which a resector is
installed in such a way that the resector may pivot around the
stem. The resector is then aligned with the axis selected by
the surgeon according to known methods, and is pinned to 60
the femur and proximal tibia. A cut is then made in the femur
after which the resector is removed while leaving the tibial
pins in place, the pins being headless pins. A second resector
is then installed on the pins to effect the required cut of the
tibia. Other cuts are made in the femur according to known 65
procedures, and the prostheses are then installed according
to known procedures.

2

Accordingly, since they are relatively small, the spacers
are relatively easy to install between the proximal tibia and
distal femur. The spacers include a recess to clear the
anterior tibial rise, such that the spacer is fully engaged both
5 with the corresponding condyle and the tibial plateau where
the prostheses are to be implanted. Since the spacers have no
moving parts, minimal manipulation of the instruments
within the sagittal plane is required.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a sagittal view of a partial knee prosthesis
implanted on the distal femur and proximal tibia of a patient;

FIGS. 2-5 are side views of spacers used in the surgery 15
resecting the proximal tibia and distal femur to accommo-
date implantation of the implant illustrated in FIG. 1;

FIG. 6 is a sagittal view illustrating one of the spacers
illustrated in FIGS. 2-5 installed between the distal femur
and proximal tibia of a patient undergoing knee replacement
surgery; 20

FIG. 7 is a posterior view taken along line 7-7 of FIG. 6;

FIG. 8 is a sagittal view similar to FIG. 6 but illustrating
a resector installed on the spacer illustrated in FIG. 6;

FIG. 9 is an anterior view taken substantially along lines 25
9-9 of FIG. 8;

FIGS. 10 and 11 are views similar to FIGS. 8 and 9
respectively but illustrating an alignment tower installed on
the resector illustrated in FIGS. 8 and 9;

FIGS. 12 and 13 are views similar to FIGS. 10 and 11, but 30
illustrating an alignment rod installed on the alignment
tower;

FIGS. 14 and 15 are views similar to FIGS. 8 and 9, but
illustrating the manner in which the distal femur is resected
using the resection kit in the present invention;

FIGS. 16 and 17 are views similar to FIGS. 14 and 15, but 35
illustrating another resector mounted on the spacer and
further illustrating the manner in which the resection is
performed;

FIGS. 18 and 19 are views similar to FIGS. 16 and 17 but 40
illustrating the completed tibial cut and distal femoral cut.

FIG. 20 is a perspective view of a spacer according to
another embodiment; and

FIG. 21 is an anterior view of the spacer of FIG. 20
installed between the distal femur and proximal tibia and 45
having a resector installed on the spacer.

DESCRIPTION OF THE PREFERRED
EMBODIMENT

As discussed above, the present invention relates to a
method and apparatus for resecting a femur and tibia and for
implanting a partial knee prosthesis, the resection being
effected by using a resecting kit. The resecting kit includes
a set of multiple spacers each having different spacing
55 dimensions to permit the surgeon to adjust the spacing
between the proximal tibia and distal femur at the side of the
knee which the prosthesis is to be implanted, a pair of
resectors for guiding resectioning of the tibia and femur, and
other instruments for aligning the leg and preparing the knee
60 for implantation of the partial knee prosthesis.

Referring now to the drawings, a partial knee prosthesis
generally indicated by the numeral 10 includes a femoral
prosthesis 12 and a tibial prosthesis 14. Femoral prosthesis
12 is implanted upon the distal femur 16, and the tibial
prosthesis 14 implanted on the proximal tibial 18. As seen in
65 FIGS. 7 and 9, the femur terminates in condyles 20 and 22.
Since the prosthesis 10 may be used to replace either the

lateral or medial condyle of the patient, femur **16** and proximal tibia **18** may represent either the right or left leg of the patient. The proximal tibia **18** terminates in a tibial plateau **24** bounded in part by the anterior tibial rise **26**. In order to effect proper implantation of the prosthesis, a portion of the tibial plateau must be resected to provide a flat surface **28**, which must be drilled in order to accommodate implantation of tibial prosthesis **14**, which is then cemented into place. The distal femur must be resected to provide a distal femoral cut forming a surface **30**, a posterior chamfer femoral cut forming a surface **32**, and a posterior femoral cut forming a surface **34**. Femoral prosthesis **12** includes anchors (not shown) which are received within holes drilled in one or more of the surfaces **30**, **32** and **34**. The present invention relates to a method and apparatus for effecting the resections forming the surfaces **28** and **30**. Surfaces **32** and **34** are resected after the resections forming the surfaces **28** and **30** are effected. The cuts resulting in surfaces **32** and **34** are made in a conventional manner, such as by temporarily installing a drilling and cutting guide in the prior art on the surface **30** and then making the cuts necessary to form the surfaces **32** and **34**.

To insure an acceptable result, it is desirable that the surfaces **28** and **30** held to as nearly parallel as possible in the lateral/medial plane, and that the surfaces **28**, **30** diverge from each other about 6 degrees-8 degrees in the anterior to posterior plane. It is also necessary to align the patient's leg to correct bow-leggedness or the patient's knock-knees. If the diseased side of the joint is the medial side, the deterioration and the cartilage and any subsequent deterioration of the bone will cause the distance between the corresponding condyle and corresponding portion of the tibial plateau to narrow, resulting in the patient becoming bow-legged. On the other hand, if the diseased portion of the joint is on the lateral side, the patient becomes knock-kneed. In any case, it is necessary during surgery to effect implantation of the prosthesis **10** to realign the patient's leg and correct the bow-leggedness and/or knock-knees. The method and resection kit of the present invention permits the patient's leg to be straightened without over-correcting, since any over-correction will result in increased wear on the other side of the joint. Furthermore, the method and kit according to the present invention assures proper alignment of the surfaces **28** and **30**.

After the joint has been opened by an incision of about two to three inches in length, the surgeon selects one of the spacers **36A-D** illustrated in FIGS. **2-5** which the surgeon judges will provide the proper spacing between the distal femur **16** and proximal tibia **18** to correct the alignment of the patient's leg. In practice, many more spacers having different spacing dimensions will be provided; the spacers have been illustrated in FIGS. **2-5** for illustrative purposes only. Each of the spacers **36A-D** include a stem **38** and an arm **40** extending from the stem. Small spacer **36A** includes an arm **40** which includes a pair or opposed, substantially flat, parallel surfaces **42**, **44**. The spacing dimension of spacer **36A** is the distance between the surfaces **42** and **44**. Each of the remaining spacers **36B-D** include an arm **40A-D** having a substantial flat upper surface **42A** with a bump **46** projecting from the surface **44**. Each of the bumps **46** are defined by a curved surface **48** for a purpose described hereinafter. The spacing dimensions in each of the spacers **36B-D** is the distance between the upper surface **42** and the maximum dimension of the bump **46**. Curved surface **48** of the bump **46** cooperates with the surface **44** and transverse end surface **50** of the stem **38** to define a recess **52** therebe-

tween. Transversely spaced, longitudinally extending keels **54** are provided on the bumps **46** (see FIG. **7**).

After the patient's knee has been opened by the surgeon, the surgeon selects one of the spacers **36** which the surgeon judges will correct the patient's knock-knees or bow-leggedness and properly align the patient's leg. The surgeon manipulates the bump **46** (or the flat arm of spacer **36A**) of the selected spacer over the anterior tibial rise **26** so that the anterior tibial rise **26** is received within the recess **52** of the spacer, the curved surface **48** engages the tibial plateau **24**, and the upper flat surface **42** engages the contoured surface **55** of the condyle **20** at its closest approach to the tibial plateau **24**. The keels **54** resist movement of the spacer **36** in the lateral-medial direction, but permit movement in the anterior-posterior direction to permit installation of the spacer such that the spacer separates the joint to correct the aforementioned alignment of the patient's leg. When the spacer is properly installed with the upper surface **42** engaging the contoured surface **55** at its, closest approach to the tibial plateau and with the curved surface **48** engaged with the tibial plateau, the surgeon then makes a judgment as to whether the patient's leg is properly aligned. If the surgeon decides that a different spacer is needed, the surgeon removes the first selected spacer and selects another spacer for installation between the distal femur **16** and proximal tibia **18**. It will be noted that stem **38** of the selected spacer projects from the joint.

The surgeon then installs resector **56** on the stem **38** (FIGS. **8** and **9**). The resector **56** includes a cylindrical aperture **58** slidably and rotatably engages the stem **38** to permit the resector **56** to pivot about the stem **38**. The resector **56** further includes a slot **60** which is adapted to receive the blade of a saw that will effect cutting of the condyle **20**. The resector **56** includes multiple apertures **62**, **64**, **66**, **68**, and **70**, which are adapted to receive pins which will be hereinafter described. Furthermore, the resector **56** includes a pair of opposed, parallel side edges **72**, **74**.

After the resector is installed on the stem **38**, an alignment tower generally indicated by the numeral **76** (FIGS. **10** and **11**) is installed on the resector **56**. The tower **76** includes a bifurcated end **78** including arms **80** that slidably engage the opposite side edges **72**, **74** of the resector **56**. The opposite end of the alignment tower **76** carries a cylinder **82**, which projects transversely with respect to the alignment tower **76**. A longitudinal opening **83** in alignment tower **76** receives the portion of stem **38** projecting from resector **56**. Cylinder **82** defines an opening **84** extending transversely with respect to the alignment tower **76** which receives a longitudinally extending alignment rod **86**. It is noted that, the side edges **72**, **74** of resector **56** are perpendicular to the slot **60** in the resector **56**, since the alignment tower **76** maintains the alignment rod **86** parallel to the side edges **72**, **74**, the axis of the alignment rod **86** will accordingly also be perpendicular to the slot **60**. According to well-known techniques, the surgeon manipulates the alignment rod **86**, which extends the entire length of the tibia, until the alignment rod **86** extends along an axis desired by the surgeon and which is chosen according to the surgeon's judgment and experience. In most cases, however, the selected axis will approximate the mechanical axis of the tibia. It will be noted that because of the curved surface **48** of the bump **46**, the surgeon may rotate the spacer in the sagittal plane to permit the rod **86** to clear any obstacles, such as any projecting portions of the patient's leg or ankle.

After the surgeon is satisfied with the alignment of the resector **56**, headed or headless pins are installed in aperture **62** and headless pins are installed into a selected pair of

5

apertures 64-70. As illustrated in FIGS. 14 and 15, pin 88 is installed in aperture 62 and pins 90 and 92 are installed in the apertures 64 and 68. The pins 88-92 are installed and secured in holes drilled in the distal femur and proximal tibia to thereby secure the resector 56 in place. As discussed above, the slot 60 of resector 56 will be perpendicular to the axis selected by the physician. After the resector 56 is pinned, the alignment rod 86 and alignment tower 76 are removed. A threaded opening 93 is provided which receives an appropriate threaded rod of a tool used to extract the alignment tower 76. A blade 94 of a conventional surgical saw is installed in the slot 60 and effects cutting of the condyle 20 to form the surface 30. Since the saw is guided by the slot 60, surface 30 will also be perpendicular to the axis selected by the physician.

After the surface 30 is cut, the pin 88 is removed, but the pins 90 and 92 are left in place. Since the pins 90, 92 are headless pins, the resector 56 may be pulled off of the pins by use of appropriate clamping tool (not shown) engaging the side edges 72, 74 so that the resector 56 may be pulled off of the pins 90, 92. After the surgeon has removed the resector 56, a second resector 96 is installed on the pins 90 and 92, care having been taken not to disturb the pins 90 and 92 in any way during the removal of the resector 56 and installation of the resector 96. The resector 96 is provided with a first set of apertures 98A, 98B, a second set of apertures 100A, 100B, a third set of apertures 102A, 102B, and a fourth set of apertures (through which the pins 90 and 92 extend as illustrated in FIGS. 16-17) 104A and 104B. Each of the aperture sets are spaced a distance to conform with the spacing between the pins 90 and 92, as established by use of the resector 56 as described above. The multiple sets of apertures are provided so that the surgeon may select the distance between the tibial cut and the distal femoral cut. The resector 96 is also provided with a slot 106. The resector is installed on the pins 90 and 92 and since the resector 96 has been designed with the slot 106 in a pre-established relationship with respect to the slot 60, the cut formed by the saw blade 108 through the slot 106 has the same relationship to the distal femoral cut 32. That is, the tibial cut formed by saw blade 108 in slot 106 in the resector 96 will be parallel to the horizontal femoral of surface 32 in the laterally-medial plane, and will have the proper diverging angle in the anterior posterior plane. After the tibial surface 28 is formed, the resector 96 is removed from the pins 90 and 92. The aforementioned fixture (not shown) is mounted on the surface 32 to guide resection of the surfaces 32, 34, and to drill the necessary apertures (not shown) to mount the femoral prosthesis 30. Similarly, a template (not shown) is used to drill the necessary mounting holes in the tibial surface 28. The prostheses 12 and 14 can then be installed according to known procedures.

Referring now to the embodiment of FIGS. 20 and 21, elements the same or substantially the same as those in the embodiment of FIGS. 1-19 retain the same reference numeral. A spacer generally indicated by the numeral 110 for setting the spacing between the distal femur and proximal tibia has been selected by the surgeon from a set of spacers similar to the set illustrated in FIGS. 2-5. However, the stem 38 of the spacers illustrated in FIGS. 2-5 has been replaced on the spacer 110 by a stem 112 having flats 114, 116 on opposite sides thereof. Similarly, the resector 56 of the embodiment of FIGS. 1-19 has been replaced with a resector 118 in the embodiment of FIGS. 20 and 21, which differs from the resector 56 only in that the aperture 58 of resector 56 has been replaced in resector 118 with an aperture 120 which is shaped complementary to the stem 112 (that is, with

6

opposite flats 122, 124) so that the stem 112 is slidably received in the aperture 120 but is prevented from rotating relative thereto.

Accordingly, when the alignment tower 76 is installed on the resector 118 (in exactly the same manner as described above with respect to the resector 56), the resector 118 will not rotate relative to the stem during the alignment procedure but instead will pivot the spacer 110 relative the distal femur and proximal tibia. Since the resector 118 is not rotated relative to the spacer, the surgeon is assured that the cut made by use of the resector 118 is at a predetermined distance from the upper surface 42 of the spacer and is parallel thereto, although the spacing between the distal femur and proximal tibia will be slightly different from that initially established by installation of the spacer 110. Some surgeons prefer to assure that the size of the cut is confirmed by the resector, even if the spacing between the bones may be affected slightly; accordingly, these surgeons may prefer to use the spacer 110 and resector 118.

The invention claimed is:

1. Method of resecting a distal femur and a proximal tibia in preparation for implanting a partial knee prosthesis comprising the steps of installing a spacer having a fixed spacing dimension between the distal femur and proximal tibia to establish a gap of known width therebetween, said spacer having a projecting stem, mounting a resector on said stem, aligning said resector along a selected axis represented by an alignment rod extending from said resector, pinning said resector to both said distal femur and proximal tibia using multiple pins to prevent relative movement of said resector with respect to both said distal femur and proximal tibia, and using said resector to guide resection of one of said distal femur and proximal tibia; said spacer including an arm extending axially from said stem; said fixed spacing dimension being defined by a bump extending from one side of said arm and a substantially flat surface on the other side of said arm opposite said bump; and said arm defining a recess between said bump and said stem.

2. Method of resecting as claimed in claim 1, wherein said method includes the step of selecting said spacer from a set of multiple spacers each having a different fixed spacing dimension.

3. Method of resecting as claimed in claim 1, wherein said bump on said spacer includes a curved outer edge, said method including the step of rotating said spacer about said curved outer edge to permit said alignment rod to be manipulated over obstructions.

4. Method of resecting as claimed in claim 3, wherein said proximal tibia terminates in a tibial plateau and said distal femur terminates in a condyle having a contoured distal surface defining said gap established by said spacer, said method including the step of maintaining engagement of said flat surface with said area as said spacer is installed between said distal femur and proximal tibia.

5. Method of resecting as claimed in claim 1, said method including the step of inserting said arm between said distal femur and proximal tibia while maintaining said flat surface in engagement with said distal femur and the bump in engagement with said proximal tibia.

6. Method of resecting as claimed in claim 5, wherein said bump is defined by a curved outer edge, said method including the step of rotating said spacer about said curved outer edge to permit said alignment rod to be manipulated over obstructions.

7. Method of resecting as claimed in claim 5, wherein said proximal tibia terminates in a tibial plateau and said distal femur terminates in a condyle having a contoured distal

7

surface defining said gap established by said spacer, said method including the step of maintaining said curved outer edge in engagement with said tibial plateau and said substantially flat surface in engagement with said contoured distal surface as said spacer is rotated about said curved outer edge. 5

8. Method for resecting as claimed in claim 1, wherein said proximal tibia terminates in a tibial plateau bounded by an anterior tibial rise, and said distal femur terminates in a condyle having a contoured distal surface defining said gap established by said spacer, said step of installing said spacer including the steps of sliding the bump over the anterior tibial rise while maintaining said flat surface in engagement with said contoured distal surface. 10

9. Method of resecting as claimed in claim 8, said method including the step of permitting said anterior tibial rise to be received within said recess when the spacer is installed in said gap. 15

10. Method of resecting as claimed in claim 1, wherein said proximal tibia terminates in a tibial plateau bounded by an anterior tibial rise, and said distal femur terminates in a condyle having a contoured distal surface defining said gap established by said spacer, said method including the steps of engaging said bump with the tibial plateau, receiving said tibial rise in said recess, and engaging said arm with said contoured distal surface. 20 25

11. Method of resecting as claimed in claim 1, wherein said method includes the step of using a second resector to resect the other of said distal femur and proximal tibia.

12. Method of resecting as claimed in claim 11, wherein said method includes the steps of removing said first-mentioned resector from said pins after resecting said one of said distal femur and proximal tibia without changing the position of at least two of said pins, and installing said second resector on said pins, whereby the orientation of the cuts in the distal femur and proximal tibia relative to one another is maintained by the unchanged position of said pins. 30 35

13. Method of resecting as claimed in claim 12, wherein said second resector includes multiple sets of apertures for receiving said pins, whereby the distance between said cuts may be varied while maintaining the orientation of the cuts relative to one another. 40

14. Method of resecting as claimed in claim 1, wherein said resector is aligned by rotating said resector relative to said stem. 45

15. Method of resecting as claimed in claim 1, wherein said resector is aligned by pivoting the resector and the spacer as a unit, said resector being secured against rotation relative to said spacer. 50

16. Resecting kit for resecting a distal femur and a proximal tibia in preparation for implanting a partial knee prosthesis comprising:

8

a set of multiple spacers each having a different fixed spacing dimension wherein each of the said spacers includes a projecting stem, whereby a spacer having the desired spacing dimension may be selected and installed between the distal femur and proximal tibia to establish a desired spacing therebetween; and

resecting means mountable on said spacers for resecting said distal femur and proximal tibia, said resecting means including a resector having an aperture pivotally mounted on said stem and multiple pins for securing said resector, said resector guiding resection of one of said distal femur and proximal tibia;

each of said spacers including an arm extending between said proximal tibia and distal femur and a stem, said arm extending from said stem, said stem projecting from between said distal femur and proximal tibia, said resecting means being mounted on said stem;

the distal femur terminating in a pair of condyles and the proximal tibia terminating in a tibial plateau circumscribed in part by an anterior tibial rise, said arm including a bump on one side thereof for engagement with the tibial plateau and a surface opposite said bump for engagement with a corresponding one of said condyles; and

said arm defining a recess between said stem and said bump, said recess receiving the anterior tibial rise when the spacer is installed with the bump engaging the tibial plateau.

17. Resecting kit as claimed in claim 16, wherein said resecting means includes a second resector, said pins being headless to permit removal of said first-mentioned resector and installation of said second resector on said pins whereby the pins maintain the relative orientation of said resectors to permit resection of the other of said distal femur and proximal tibia.

18. Resecting kit as claimed in claim 16, wherein said surface opposite said bump is a substantially flat surface.

19. Resecting kit as claimed in claim 16, wherein said stem terminates in a transverse surface defining one edge of said recess.

20. Resecting kit as claimed in claim 16, wherein said bump is defined by a curved outer edge to permit limited rotation of said spacer about said curved outer edge in response to movement of the stem in a sagittal plane.

21. Resecting kit as claimed in claim 20, wherein said bump includes transversely spaced keels to resist movement of the spacer in a lateral-medial plane when the spacer is installed between the one condyle and said tibial plateau.

* * * * *